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FOREST INSECT SURVEY - SEASON OF 1946 STANISLAUS NATIONAL FOREST, CALIFORNIA AND ADJACENT PRIVATE LANDS

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by

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Berkeley, California
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Forest Insect Laboratory
Berkeley, California
February 12, 1947

FOREST INSECT SURVEY - SEASON OF 1946
STANISLAUS NATIONAL FOREST, CALIFORNIA
AND ADJACENT PRIVATE LANDS

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INTRODUCTION

The 1946 survey of this forest area was made to appraise the characteristics of insect conditions that had developed in the principal timber stands during the years 1945 and 1946. The immediate objectives were to locate infestations that appeared to be critical, and to measure barkbeetle losses sufficiently serious to demand control considerations.

The area reported upon includes the commercial and recreational timber stands on the Stanislaus National Forest and adjacent timbered lands under private ownership. These privately owned lands are mainly situated along the western border of the forest. The stands within the National Forest boundaries have been surveyed for insect losses periodically since 1925, and annually since 1933. As a result of these surveys methods of sampling insect losses have been developed for local stands and several sample plots have been permanently established. The evolution of infestation cycles has been determined and recorded for these years. Prior to the current year annual insect conditions have been reported on an infestation unit basis, and only on the lands within the National Forest. In the 1946 survey the front forest, mainly private lands, was included and the reporting basis changed. Beginning with this report previously used infestation units have been dropped and the established working circles are adopted for the reporting areas.

The 1946 survey was made by John E. Patterson of the Berkeley Forest Insect Laboratory, Bureau of Entomology and Plant Quarantine, during the period October 20 to 31. Assistance in the field work on parts of the area was given by D. H. Knowlton, State Division of Forestry, and by F. W. Ahrenholz of the Stanislaus Forest staff. The survey was principally of the reconnaissance type based on road traverse of stands and viewing timbered slopes from lookout points. This extensive coverage was supplemented by road counts and cruising of established roadside plots. Intensive methods were used sufficiently to gain an adequate measure of infestation and loss in each working circle. The percent of coverage of the entire area was: (1) By extensive methods 80 percent; and (2) By intensive methods 3 percent. The total cost of the survey was $349.12.

SURVEY DATA OBTAINED

Several species of forest insects are represented in these forests and all have caused damage in the past and are a potential hazard at the present time. These species in the order of their economic importance are: The western pine beetle, Dendroctonus brevicomis, which attacks ponderosa pine; The mountain pine beetle, Dendroctonus monticolae, attacks ponderosa pine, sugar pine, and lodgepole pine; The pine engraver beetle, Ips confusus, attacks ponderosa pine and sugar pine, principally the tops of trees; The fir engraver beetle, Scolytus ventralis, attacks both white and red fir; The Jeffrey pine beetle, Dendroctonus jeffreyi, whose attacks are confined to Jeffrey pine.

These stands have had a long history of barkbeetle depredations. Past insect losses have periodically been heavy. They have, however, varied in intensity from an endemic level, when losses were more than offset by annual increment, to epidemic status resulting in losses reaching a high point of several hundred feet per acre. During this long period of observations all stands on the area have suffered, although the high levels of infestation have not occurred simultaneously in all the forest zones. As a result peak losses have been somewhat leveled off during this long period.

The last previous annual loss for which complete figures are available, that of 1945, shows that the trend of infestations was slightly downward and losses were less than those sustained during each of the three preceding years. The present infestation on the area is characterised by a pronounced aggressiveness generally in the marginal pine stands and in the pine-fir stands of the intermediate zones. In the higher zonal forests the current infestation is at a low level. The total loss for the year 1946 was not measurable at the time the survey was made since the overwinter brood trees had not faded. Comparable data from measured plots indicate, however, that the current year infestations are again on the upswing and that the total loss for this year will exceed that of 1945 by approximately 25 percent. The current losses are predominately due to the western pine beetle in ponderosa pine, and to the fir engraver beetle in white fir. They occur generally throughout the two lower zones with grouping tendencies in the fron forests, but are confined to scattered trees of large size in the pine-fir zone.

Infestation conditions on the several working circles for 1945 (complete record), and for 1946 (partial), are described in the following paragraphs:

WC 106 - San Andreas:

Commercial stands predominate in this area. Both marginal forests of low grade stocks and intermediate zone forests of high grade are represented. Timber values are high. More than half the acreage is privately owned and about 40 percent is logged. Past losses in all stands have been relatively high, especially in the marginal stands. The measured loss sustained in 1945 on 3,100 acres of sample strips amounted to 30 board feet per acre. The 1946 loss is expected to be about 26 percent

greater in both number of trees killed and in volume. Present infestations occur throughout the area but are more concentrated in the second growth marginal stands in the front forest, and in the pine-fir zone immediately above. These concentrations are in the main closely tied to logging operations and occur on both logged lands and in nearby uncut stands. Group killing is a characteristic of these infestations and killed trees were highly conspicuous in 1945. The 1946 loss has leveled over these areas in general but some concentrations are still sustained in the second growth margianl stands. The western pine beetle, mountain pine beetle and pine engraver beetles constitute the bulk of infestation in pine; the fir engraver beetle is responsible for losses in fir. The current trend of infestations indicate slightly decreased losses in the marginal stands with moderate increases elsewhere, particularly in the pine-fir stands of the intermediate zone.

WC 107 - Stanislaus:

This area is highly diversified in both topography and timber types, as well as in insect infestations. About 45 percent of the timbered acreage is logged. Both intermediate and alpine zone types are represented. The two recreational areas of Pinecrest and Dardanelle occupy the high eastern section. Damaging infestations caused by barkbeetles have occurred in the past but present losses are lower. The present trend of infestations is slightly downward so that decreasing losses are indicated. The measured insect loss sustained in 1945 on 3,400 acres amounted to an average of 19 board feet per acre. The loss for 1946 is expected to equal these proportions. Control work carried out last spring in the Pinecrest recreational stands was highly successful in eradicating a persistent infestation in this reserve. So far recurring infestations have been insignificant on the control area.

WC 108 - Sonora (Rose Creek):

The marginal stands on this area are largely second growth ponderosa pine and are widely scattered. Post logging losses have been high and damaging. Recently losses have tended to level off with a general improvement in stand conditions. Dendroctonus and Ips beetles have been the prime agents responsible for recent losses. No sampling was made on this area. The information recorded is the result of reconnaissance of the area. Present infestation trends appear to be directed toward decreased losses so those sustained during 1946 should be substantially less than the 1945 loss.

WC 109 - Tuolumne:

The mixed conifer stands of this area have been relatively free of damaging insect infestations during recent years. Over 50 percent of the timbered acreage has been logged. The general situation on this areas was

ascertained by reconnaissance methods. Current infestation conditions are relatively low with a minimum of damage sustained in 1945; and so far in 1946.

WC 110 - Groveland:

Timber stands of this area are definitely of the marginal type. Only about 10 percent is in cut over status although second growth stands which have grown up since early mining days cover a large part of the western section. Past insect losses have been severely damaging and have been sustained for a period of years. As a result many shags and large openings are prevalent in the stands. Infestations during quite recent years have been subnormal with diminished losses. There is no present evidence indicating an early change is this status. The 1945 loss measured on 8,100 acres of sample sprips amounted to only 12 board feet per acre.

WC 111 - Merced:

The virgin forests of this working circle formerly contained sites 1 and 2 stands of ponderosa pine and sugar pine of the highest quality and value. Many of these stands have been cut in past logging operations which covered about 35 percent of the timbered acreage. However, the residual forests still contain many such stands which warrant full protection from insect losses.. Past insect losses have been periodically high and damaging. Infestations reacged a high point in 1933 resulting in an extensive control project which was carried out in 1933-1934. The beneficial effects secured by control were sustained for a period of 8 years with an annual loss of less than normal for these stands. Following cessation of logging operations in 1942 post logging infestations developed to high proportions in uncut stands in the central section of the area.

A highly damaging fire occurred in 1944 on Sawmill Mountain in the central section. During the two years following this fire surrounding infestations were attracted to the burned area concentrating in the fire injured trees with resultant epidemic losses. These losses were sustained unfiminished through 1946 so that the magnitude of the overwintering current infestation on the burn and its environs will at least equal that of 1945. Many large trees of high quality are involved. It is estimated that this overwintering infestation will aggregate about 150 trees, both ponderosa pine and sugar pine.

The measured loss in 1945 on 900 acres of sampled strips averaged 6 board feet per acre. However, the 1945 loss was much higher where concentrated attacks had occurred.

RESULTS OF RECENT CONTROL WORK

The only insect control work carried out in 1946 on the regional area was located in the Pinecrest recreational area of 5,760 acres. Here a total of 28 trees, containing 60,350 board feet, were felled and treated by peeling and burning the bark. The total cost of this work was $756.52. The results were highly satisfactory. No recurrent infestation had appeared on the control area up to the late fall of 1946.

CONCLUSIONS AND RECOMMENDATIONS

Current insect losses are insufficient to warrant control by direct measures on any sizable areas.

Salvage control is recommended on the Sawmill Mountain burn and its environs. The current loss on these lands is highly epidemic but because of the prevalence of severely fire-scorched trees within the burn limits control by cutting out and burning the infested trees will not completely remove the hazard or insure freedom from subsequent losses. By removing and salvaging all the severely scorched trees along with infested trees adequate control can be accomplished and maintained, and at the same time highly susceptible fire injured trees removed from the stands. A good deal of salvage may also accrue by the logging of trees recently dead from insect attack. This salvage control operation should be completed before overwintered broods begin to emerge in April 1947.

MEASURED INSECT LOSSES ON ROADSIDE PLOTS AND TRAVERSE STRIPS

Working Circles	Sample:	Acres:	Loss in 1945 Board feet per acre		Loss in 1946 (*) Board feet per acre	
			Pine	Fir	Pine	Fir
106	Folsom	450	53	15	26	6
San Andreas	Esmeralda	340	7		1	
	Solinsky	600	25	15	10	
	Jesus Maria	800	15		5	
	Blue Mountain	240	14	4	17	5
	Dorrington	670	21	10	16	
107	Smoothwire	2,440	9	3	6	
Stanislaus	Niagara	600	20	10	10	9
	Cow Creek	200	9		10	
	Pinecrest	190	23	3		
110	Buck Meadows	500	13		1	
Groveland	Smith Peak	7,600	10		7	
111 Merced	Mather	930	6		3	

(*) Only part of annual loss visible at time of survey.